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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/029,973	12/31/2001	Jeong Ho Lee	P21833	5445

7055 7590 05/17/2004

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EXAMINER	
KRISHNAMURTHY, RAMESH	
ART UNIT	**PAPER NUMBER**
3753	

DATE MAILED: 05/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/029,973	LEE ET AL.
	Examiner	Art Unit
	Ramesh Krishnamurthy	3753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 February 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,4-6,8 and 9* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,4-6,8 and 9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

This office action is responsive to amendment filed 02/17/2004.

Claims 1, 4 – 6, 8 and 9 are pending.

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 8 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Miura et al. (US 5,850,851).

Regarding claim 8, it is noted that in the device of Miura et al. discloses a check valve (40C) that prevents flow in one direction while permits in an opposite direction, with the parts of the check valve overlapping in the same sense as the parts in the Applicant's invention.

Regarding claim 9, it is noted that the helix shape of the helical plate spring check valve (40C) is a circular helix shape (see Fig. 11).

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1, 4 – 6, 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Prior Art admitted to by the applicant (Figs. 1 – 3B & paragraphs (02) – (21) in the specification) in view of Miura et al. (US 5,850,851), as applied to claims 8 and 9 above.

The prior art admitted to by the applicant (Figs. 1 – 3B & paragraphs (02) – (21) in the specification) discloses a valve plate (13) having an inlet hole (13a) that draws in a low pressure fluid by an open-and-shut operation driven a piston (12) movement, and a discharging hole (13b) that discharges a high pressure fluid through an open-close operation; and

A check valve (14a) coupled to the inlet hole and a check valve (14b) coupled to the discharge hole of the valve plate (13).

The prior art admitted to by the applicant (Figs. 1 – 3B & paragraphs (02) – (21) in the specification) discloses the invention claimed with the exception of disclosing the check valve of having a helical plate spring structure.

Miura et al. ('851) discloses (figs. 12, 13) a check valve (40C) having a spiral i.e. helical plate spring structure that allows a proper operation of the valve through a

construction that provides a positive checked position (i.e. a closed position) and a low-restriction flow in the open position.

The valve of Miura et al. has many advantages including reduced manufacturing cost by combining the valve and spring into an integrated structure and also simplifying the assembly of the valve into the housing.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have replaced the inlet plate (14a) or the discharge plate (15) with their respective check valves, with a check valve having a helical plate spring structure for the purpose of obtaining a proper operation of the valve through a construction that provides a positive checked position (i.e. closed position) and a low-restriction flow in the open position along with realizing reduced manufacturing cost by combining the valve and spring into an integrated structure and also simplifying the assembly of the valve into the housing, as recognized by Miura et al..

Regarding claim 4, it is noted that the structural shape of the check valve is such that the width becomes narrower as distance from the hole (opening in plate (36), for example) increases.

Regarding claim 5, it is noted that in the combination of Miura et al. and the prior art admitted to by the applicant (Figs. 1 – 3B & paragraphs (02) – (21) in the specification), the movement of each floor or flexible arm, is caused by the piston movement.

Regarding claim 6, it is noted that the device according to the combination of Miura et al. and the prior art admitted to by the applicant (Figs. 1 – 3B & paragraphs

(02) – (21) in the specification) being applicable to fluid compressor/pumps in general, would also work with the fluid being a refrigerant.

Response to Arguments

Applicant's arguments with respect to claims 1, 4 – 6 have been considered but are not persuasive. Regarding applicant's argument that the valve parts in Miura et al. do not overlap, applicant's attention is directed to Fig. 12 which clearly shows that parts of the valve to be in an overlapping position. Regarding applicant's argument that Miura et al. is not analogous art compared to that of the applicant's invention, it is pointed out that, both Miura et al. and the applicant are concerned with the same problem of providing a valve that prevents flow in one direction while permitting in an opposite direction and thus cannot be considered to be from non-analogous art when compared to that of the applicant's invention.

Applicant's arguments with respect to claims 8 and 9 have been considered but are moot in view of the new grounds of rejection set forth above.

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The document WO 00/48533 discloses a multi-purpose valve having a helical structure and the patent to Onstenk et al. discloses a check valve having a helical plate structure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ramesh Krishnamurthy whose telephone number is (703) 305 - 5295. The examiner can normally be reached on Monday - Friday from 8:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David A. Scherbel, can be reached on (703) 308 - 1272. The fax phone number for the organization where this application or proceeding is assigned is (703) 872 – 9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308 - 0861.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ramesh Krishnamurthy
Examiner
Art Unit 3753